

**RESPONSE UNDER 37 CFR 1.116  
EXPEDITED PROCEDURE  
EXAMINING GROUP 2627  
Docket No.: 1293.1273**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:

Jin-gyo SEO

Serial No. 09/995,828

Group Art Unit: 2627

Confirmation No. 9729

Filed: November 29, 2001

Examiner: Tan X Dinh

For: ADAPTIVE RECORDING CONTROL METHOD AND APPARATUS FOR HIGH  
DENSITY OPTICAL RECORDING

**AMENDMENT AFTER FINAL REJECTION**

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Attention: **MAIL STOP AF**

Sir:

This is in response to the Office Action mailed April 30, 2007, and having a period for response set to expire on July 30, 2007.

The following amendments and remarks are respectfully submitted. Reconsideration of the claims is respectfully requested.

**IN THE CLAIMS:**

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~.

Please AMEND claims 18 and 27, and CANCEL claim 30 in accordance with the following:

1-17. (Cancelled)

18. (Currently Amended) A method of controlling recording a signal on an optical disc, the method comprising:

providing a multiple pulse train for recording a mark on the optical disc, the multiple pulse train comprising a first pulse, a multi-pulse having a reference power level, and a last pulse; and controlling a power level of said last pulse independent of a power level of said first pulse,

wherein said last pulse is a different power level than said first pulse in a third multi-pulse train.

19. (Previously Presented) The method according to claim 18, wherein the power levels of the first and last pulse are controlled by selecting a peak power level  $P_w$ , a power  $P_{wh}$  higher than the peak power level  $P_w$ , or power  $P_{wl}$  lower than the peak power level  $P_w$ .

20. (Previously Presented) The method according to claim 19, wherein  $P_w$  is an optimum peak power level and  $P_{wh}$  and  $P_{wl}$  are generated by adding or subtracting a predetermined value to or from the optimum peak power level  $P_w$ , respectively.

21. (Original) The method according to claim 18, wherein said multi-pulse reference power level is greater than said first pulse power level and less than said last pulse power level.

22-23. (Cancelled)

24. (Previously Presented) A method of controlling recording marks on an optical disc using multiple pulse trains comprising first, second and third multi-pulse trains each having a first pulse, a multi-pulse having a reference power level, and a last pulse, the method comprising:

providing a different reference power level to each multi-pulse train depending on the energy or density of a non-return-to-zero inverted (NRZI) signal based on a correlation between a current mark and a space between successive marks,

wherein the power level of the first and last pulse of each of said first, second and third multi-pulse trains is higher or lower than said reference power level and a power level of a last pulse in the third-multi-pulse train is different than a first pulse of the third multi-pulse train.

25. (Cancelled)

26. (Previously Presented) The method according to claim 18, wherein the power level of said multi-pulse is controlled independent of the power level of said first pulse and the power level of said last pulse.

27. (Currently Amended) A method of forming a mark on an optical recording medium, the method comprising:

generating a recording pulse train comprising a first pulse, a multi-pulse having a peak power level, and a last pulse;

adapting a power level of at least one of the first pulse and the last pulse relative to a peak power level of the multi-pulse depending on a correlation between the mark and one of a previous space and a next space, respectively, wherein an adapting of the power level of the first pulse is independent of an adapting of the power level of the last pulse; and

driving a recording unit with the recording pulse train to record the mark on the optical recording medium,

wherein a power level of both the first pulse and the last pulse of a first multi-pulse in multiple pulse trains is adapted and a power level of only a last pulse of a third multi-pulse in the multiple pulse trains is adapted.

28. (Previously Presented) The method of claim 27, further comprising:  
adapting the peak power level of the multi-pulse depending on a size of the mark.

29. (Previously Presented) A method of forming a mark on a recording medium in response to an NRZI signal defining a current mark, a previous space and a next space, the method comprising:

- determining a correlation between the current mark and the previous space;

- determining a correlation between the current mark and the next space;

- determining a size of the current mark;

- generating a recording pulse train for the current mark comprising a first pulse, a multi-pulse having a peak power level, and a last pulse;

- adapting the recording pulse train for the current mark by selecting one of a plurality of recording pulse variations based on the correlations and the current mark size, the plurality of recording pulse variations comprising:

  - adapting only the first pulse depending on the correlation between the current mark and the previous space,

  - adapting only the last pulse depending on the correlation between the current mark the next space,

    - adapting the first and last pulses depending on the size of the current mark,

    - adapting the first pulse, the multi-pulse and the last pulse depending on the size of the current mark,

    - adapting the first pulse, the multi-pulse and the last pulse to correspond to predetermined power levels without regard to the correlations or the size of the current mark,

    - adapting the first pulse based on the correlation between the previous space and the current mark and adapting the last pulse based on the correlation between the current mark and the next space,

    - adapting only the last pulse depending on the size of the current mark, and

    - adapting the first and last pulses relative to the multi-pulse depending on the correlations and adapting the multi-pulse power level relative to a predetermined value depending on the size of the current mark; and

    - driving a recording unit with a recording pulse train adapted according to the selected pulse train variation to record the current mark on the optical recording medium.

30. (Cancelled)

## **REMARKS**

### **INTRODUCTION**

In accordance with the foregoing, claims 18 and 27 have been amended. Withdrawn claim 30 has been cancelled. Claims 18-21, 24 and 26-29 are pending and under consideration.

### **CLAIM REJECTIONS**

Claims 18-20 and 26-28 were rejected under 35 USC 102(b) as being anticipated by the applicant's prior art (hereinafter "APA"), specifically Figures 1A, 1B, 2, 3A and 3B.

Claim 21 was rejected under 35 USC 103(a) as being unpatentable over the applicant's prior art, specifically Figures 1A, 1B, 2, 3A and 3B.

#### **Claims 18-21 and 26**

Amended claim 21 recites: "...wherein said last pulse is a different power level than said first pulse in a third multi-pulse train." Support for this amendment may be found in at least Figure 6B and paragraph [0039] of the specification. This amendment brings claim 18 to its previously allowed form, it being respectfully submitted that the applicant's prior art does not discuss a method of controlling recording a signal on an optical disc where the last pulse is a different power level than the first pulse in a third multi-pulse train.

Claims 19-21 and 26 depend on claim 18 and are therefore believed to be allowable for at least the foregoing reasons.

Withdrawal of the foregoing rejection is requested.

#### **Claims 27 and 28**

Amended claim 27 recites: "...wherein a power level of both the first pulse and the last pulse of a first multi-pulse in multiple pulse trains is adapted and a power level of only a last pulse of a third multi-pulse in the multiple pulse trains is adapted." Support for this amendment may be found in at least paragraph [0039] of the specification. It is respectfully submitted that this feature of independent claim 27 is not discussed in the applicant's prior art.

Claim 28 depends on claim 27 and is therefore believed to be allowable for at least the foregoing reasons.

Withdrawal of the foregoing rejection is requested.

## **ALLOWABLE CLAIMS**

The Applicant acknowledges with appreciation that claims 24 and 29 have been allowed.

## **CONCLUSION**

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: June 18, 2007

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